



[6450-01-P]

**DEPARTMENT OF ENERGY**

**Office of Energy Efficiency and Renewable Energy**

[Case No. RF-026]

**Petition for Waiver of Samsung Electronics America, Inc. from the Department of Energy Residential Refrigerator and Refrigerator-Freezer Test Procedure and Grant of Interim Waiver**

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of Petition for Waiver, Notice of Granting Application for Interim Waiver, and Request for Public Comments.

**SUMMARY:** This notice announces receipt of a petition for waiver from Samsung Electronics America, Inc. (Samsung) seeking an exemption from specified portions of the U.S. Department of Energy (DOE) test procedure for determining the energy consumption of electric refrigerators and refrigerator-freezers. Samsung asks that it be permitted to use an alternate test procedure to address the difficulties in testing dual compressor systems according to the currently applicable DOE test procedure. DOE solicits comments, data, and information concerning Samsung's petition and the suggested alternate test procedure. Today's notice also grants Samsung with an interim waiver from the electric refrigerator-freezer test procedure, subject to use of the

alternative test procedure set forth in this notice. The waiver request pertains to the basic models set forth in Samsung's petition that incorporate dual compressors.

**DATES:** DOE will accept comments, data, and information with respect to the Samsung Petition until **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** You may submit comments, identified by case number "RF-026," by any of the following methods:

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.
- E-mail: [AS\\_Waiver\\_Requests@ee.doe.gov](mailto:AS_Waiver_Requests@ee.doe.gov) Include the case number [Case No. RF-026] in the subject line of the message.
- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J/1000 Independence Avenue, SW, Washington, DC 20585-0121. Telephone: (202) 586-2945. Please submit one signed original paper copy.
- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 950 L'Enfant Plaza SW, Suite 600, Washington, DC 20024. Please submit one signed original paper copy.

Docket: For access to the docket to review the background documents relevant to this matter, you may visit the U.S. Department of Energy, 950 L'Enfant Plaza SW,

Washington, DC, 20024; (202) 586-2945, between 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays. Available documents include the following items: (1) this notice; (2) public comments received; (3) the petition for waiver and application for interim waiver; and (4) prior DOE rulemakings regarding similar refrigerator-freezers. Please call Ms. Brenda Edwards at the above telephone number for additional information.

**FOR FURTHER INFORMATION CONTACT:** Mr. Bryan Berringer, U.S. Department of Energy, Building Technologies Program, Mail Stop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-0371. E-mail: [Bryan.Berringer@ee.doe.gov](mailto:Bryan.Berringer@ee.doe.gov).

Ms. Elizabeth Kohl, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-71, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-7796. E-mail: [Elizabeth.Kohl@hq.doe.gov](mailto:Elizabeth.Kohl@hq.doe.gov).

## **SUPPLEMENTARY INFORMATION:**

### **I. Background and Authority**

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA), Pub. L. 94-163 (42 U.S.C. 6291-6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances, which includes the electric refrigerators and refrigerator-

freezers that are the focus of this notice.<sup>1</sup> Part B includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers. Further, Part B authorizes the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results that measure the energy efficiency, energy use, or estimated annual operating costs of a covered product, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for electric refrigerators and electric refrigerator-freezers is contained in 10 CFR part 430, subpart B, appendix A1.

The regulations set forth in 10 CFR part 430.27 contain provisions that enable a person to seek a waiver from the test procedure requirements for covered products. The Assistant Secretary for Energy Efficiency and Renewable Energy (the Assistant Secretary) will grant a waiver if it is determined that the basic model for which the petition for waiver was submitted contains one or more design characteristics that prevents testing of the basic model according to the prescribed test procedures, or if the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(l). Petitioners must include in their petition any alternate test procedures known to the petitioner to evaluate the basic model in a manner representative of its energy consumption. The Assistant Secretary may grant the waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(l). Waivers remain in effect pursuant to the provisions of 10 CFR 430.27(m).

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<sup>1</sup> For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

The waiver process also allows the Assistant Secretary to grant an interim waiver from test procedure requirements to manufacturers that have petitioned DOE for a waiver of such prescribed test procedures. 10 CFR 430.27(g). An interim waiver remains in effect for 180 days or until DOE issues its determination on the petition for waiver, whichever occurs earlier. DOE may extend an interim waiver for an additional 180 days. 10 CFR 430.27(h).

## **II. Petition for Waiver of Test Procedure**

On January 7, 2013, Samsung submitted a petition for waiver from the test procedure applicable to residential electric refrigerators and refrigerator-freezers set forth in 10 CFR part 430, subpart B, appendix A1. Samsung is seeking a waiver because it is developing new refrigerator-freezers that incorporate a dual-compressor design that is not contemplated under DOE's test procedure. In its petition, Samsung seeks a waiver from the existing DOE test procedure applicable to refrigerators and refrigerator-freezers under 10 CFR part 430 for the company's dual-compressor products. In its petition, Samsung has set forth an alternate test procedure and notes in support of its petition that DOE has already granted Sub-Zero a similar waiver pertaining to the use of dual compressor-equipped refrigerators. See 76 FR 71335 (November 17, 2011) (interim waiver) and 77 FR 5784 (February 6, 2012) (Decision and Order). DOE has also granted an interim waiver to LG. See 77 FR 44603 (July 30, 2012). While Samsung has acknowledged that its products have some differences from the ones addressed by the Sub-Zero waiver, Samsung asserts that the procedure outlined in that waiver will be compatible with its product. In addition, Samsung requests that it be permitted to use the alternate test

procedure that DOE has already permitted Sub-Zero and LG to use in response to similar waiver requests pertaining to the testing of refrigerator-freezers that use shared dual compressors, with minor modification suggested below:

Before: 5.2.1.4 Dual Compressor Systems with dual Automatic Defrost

With Minor Change: 5.2.1.4 Dual Compressor Systems with Automatic Defrost

(i=1 is mono, i=2 is dual)

Samsung also requests an interim waiver from the existing DOE test procedure. An interim waiver may be granted if it is determined that the applicant will experience economic hardship if the application for interim waiver is denied, if it appears likely that the petition for waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. See 10 CFR 430.27(g).

DOE has determined that Samsung's application for interim waiver does not provide sufficient market, equipment price, shipments and other manufacturer impact information to permit DOE to evaluate the economic hardship Samsung might experience absent a favorable determination on its application for interim waiver. DOE recognizes, however, that the DOE test procedure for dual compressor systems primarily addresses independent, sealed systems, which differ from the shared system used by the models listed in Samsung's petition. As a result, it is not possible to test these products using the DOE test procedure, and use of the test procedure would provide test results so

unrepresentative as to provide materially inaccurate comparative data. DOE reviewed the alternate procedure and determined that it will alleviate the testing problems associated with Samsung's implementation of a dual compressor system. Therefore, it appears likely that Samsung's petition for waiver will be granted. Previously, DOE granted Sub-Zero a similar waiver pertaining to the use of dual compressor-equipped refrigerators. See 76 FR 71335 (November 17, 2011) (interim waiver) and 77 FR 5784 (February 6, 2012) (Decision and Order). DOE has also granted an interim waiver to LG. See 77 FR 44603 (July 30, 2012).

For the reasons stated above, DOE grants Samsung's application for interim waiver from testing of its refrigerator-freezer product line containing dual compressors. Therefore, *it is ordered that*:

The application for interim waiver filed by Samsung is hereby granted for Samsung's refrigerator-freezer product lines that incorporate dual compressors subject to the following specifications and conditions below. Samsung shall be required to test and rate its refrigerator-freezer product line containing dual compressors according to the alternate test procedure as set forth in section III, "Alternate test procedure."

The interim waiver applies to the following basic model groups:

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DOE makes decisions on waivers and interim waivers for only those models specifically set out in the petition, not future models that may be manufactured by the petitioner. Samsung may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional models of refrigerator-freezers for which it seeks a waiver from the DOE test procedure. In addition, DOE notes that granting of an interim waiver or waiver does not release a petitioner from the certification requirements set forth at 10 CFR part 429.

Further, this interim waiver is conditioned upon the presumed validity of statements, representations, and documents provided by the petitioner. DOE may revoke or modify this interim waiver at any time upon a determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics.

### **III. Alternate Test Procedure**

EPCA requires that manufacturers use DOE test procedures to make representations about the energy consumption and energy consumption costs of products covered by the statute. (42 U.S.C. 6293(c)) Consistent representations are important for manufacturers to use in making representations about the energy efficiency of their products and to demonstrate compliance with applicable DOE energy conservation standards. Pursuant to its regulations applicable to waivers and interim waivers from



applicable test procedures at 10 CFR 430.27, DOE will consider setting an alternate test procedure for Samsung in a subsequent Decision and Order.

During the period of the interim waiver granted in this notice, Samsung shall test the products listed above according to the test procedures for residential electric refrigerator-freezers prescribed by DOE at 10 CFR part 430, subpart B, appendix A1, except that, for the Samsung products listed above only, include:

5.2.1.4 Dual Compressor Systems with Automatic Defrost (i=1 is mono, i=2 is dual). The two-part test method in section 4.2.1 must be used, and the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

1440 = number of minutes in a day

ET is the test cycle energy (kWh/day);

i is a variable that can equal to 1, 2 or more that identifies the distinct defrost cycle types applicable for the refrigerator or refrigerator-freezer;

D is the total number of distinct defrost cycle types;

EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration

and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);

T1 is the length of time for EP1 (minutes);

EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);

T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.

CTi is the freezer compressor run time between instances of defrost cycle type i. CTi for compartment i with long time automatic defrost system is calculated as per 10 CFR part 430, subpart B, appendix A1 clause 5.2.1.2. CTi for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Steady State for EP1:

The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments are used for test period 1, each segment must comply with above requirement.

Steady State for EP2i:

The second (defrost) part of the test must be preceded and followed by regular compressor cycles. The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the EP1 test period temperature average for each compartment.

Test Period for EP2i, T2i:

EP2i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2i to be at least 24 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following regular freezer compressor cycles, ending at the end of a regular freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24 hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

Test Measurement Frequency Measurements shall be taken at regular interval not exceeding 1 minute.

[End of 5.2.1.4]

#### **IV. Summary and Request for Comments**

Through today's notice, DOE grants Samsung an interim waiver from the specified portions of the test procedure applicable to Samsung's line of refrigerator-freezers with dual compressors and announces receipt of Samsung's petition for waiver from those same portions of the test procedure. DOE publishes Samsung's petition for

waiver pursuant to 10 CFR 430.27(b)(1)(iv). The petition includes a suggested alternate test procedure to determine the energy consumption of Samsung's specified refrigerator-freezers with dual compressors. Samsung is required to follow this alternate procedure as a condition of its interim waiver, and DOE is considering including this alternate procedure in its subsequent Decision and Order.

DOE solicits comments from interested parties on all aspects of the petition, including the suggested alternate test procedure and calculation methodology. Pursuant to 10 CFR 430.27(b)(1)(iv), any person submitting written comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is: Michael Moss, Director of Corporate Environmental Affairs, Samsung Electronics America, Inc., 19 Chapin Road, Building D, Pine Brook, NJ 07058. All submissions received must include the agency name and case number for this proceeding. Submit electronic comments in WordPerfect, Microsoft Word, Portable Document Format (PDF), or text (American Standard Code for Information Interchange (ASCII)) file format and avoid the use of special characters or any form of encryption. Wherever possible, include the electronic signature of the author. DOE does not accept telefacsimiles (faxes).

Issued in Washington, DC, on March 7, 2013.

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Kathleen B. Hogan  
Deputy Assistant Secretary for Energy Efficiency  
Energy Efficiency and Renewable Energy

January 7, 2013

The Honorable David Danielson  
Assistant Secretary, Energy Efficiency and Renewable Energy  
United States Department of Energy  
Mail Station EE-1  
Forrestal Building  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear Assistant Secretary Danielson:

Samsung Electronics America, Inc. (“Samsung”) respectfully submits the Application for Petition for Waiver and Application for Interim Waiver to the Department of Energy (“DOE” or “the Department”) regards to Samsung’s residential refrigerator-freezers that use shared dual compressors.

### **Reasoning**

10 CFR Part 430.27(a)(1) allows a person to submit a petition to waive for a particular basic model any requirements of §430.23 when (1) the basic model contains one or more design characteristics which either prevent testing of the basic model according to the prescribed test procedures, or (2) the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data.

Current test procedures as prescribed in Appendix A1 to Subpart B of 10 Part 430 do not adequately provide a way for Samsung to accurately represent the energy consumption of its refrigerator-freezers that use shared dual compressors. Meanwhile, based on similar situations, DOE has already granted a waiver to Sub-Zero in 77 FR 5784 on February 6, 2012, and similarly, an interim waiver to LG in 77 FR 44603 on July 30, 2012.

However, unlike Subzero’s design which features two compressors, two evaporators, and two defrost heaters, Samsung’s design features two compressors, four evaporators, and three defrost heaters.

Samsung’s design features four compartments that have their own evaporators. Three compartments, freezer/convertible/fresh food compartment, are accessible with an exterior door and the fourth ice room compartment is a sub compartment and located inside of the fresh food compartment. Defrost heaters are adopted at three evaporators (freezer/convertible/ice room) except the fresh food compartment evaporator and those heaters operate all together at the same time according to the control logic. So essentially,

there is only one defrost type. Despite these differences of the composition, Samsung believes that the test procedure, as prescribed in the waiver granted to Subzero and in the interim waiver granted to LG, is equally applicable and appropriate.

More specifically, Samsung's residential refrigerator-freezers that use shared dual compressors can be tested and calculate to a reasonable result with same test procedure granted to Subzero's waiver because the test procedure of Subzero's waiver adopt a multiple defrost system of 1, 2 or more compartment with distinct defrost system and Samsung's dual units have one defrost system despite of having four compartments and three defrost heaters as explained above.

Therefore, Samsung respectfully requests a waiver and an interim waiver for the alternate test procedure that DOE has already granted Sub-Zero and LG pertaining to the refrigerator-freezers that use shared dual compressors, with minor modification suggested below:

*Before:* 5.2.1.4 Dual Compressor Systems with dual Automatic Defrost

*With Minor Change:* 5.2.1.4 Dual Compressor Systems with Automatic Defrost  
(i=1 is mono, i=2 is dual)

### **Alternate Test Procedure**

Replace the multiple defrost system section 5.2.1.4 of Appendix A1 with the following:

5.2.1.4 Dual Compressor Systems with Automatic Defrost. The two-part test method in section 4.2.1 must be used, and the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

- 1440 = number of minutes in a day
- ET is the test cycle energy (kWh/day);
- i is the variable that can equal to 1, 2 or more that identifies the compartment with distinct defrost system;
- D is the total number of compartments with distinct defrost systems;
- EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);
- T1 is the length of time for EP1 (minutes);

- EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);
- T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.
- CTi is the compressor on time between defrosts for only compartment i. CTi for compartment i with long time automatic defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.2. CTi for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

#### Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

#### Steady State for EP1:

The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments are used for test period 1, each segment must comply with above requirement.

#### Steady State for EP2i:

The second (defrost) part of the test must be preceded and followed by regular compressor cycles. The temperature average for the first and last compressor cycle of the test period must be within 1.0°F (0.6°C) of the EP1 test period temperature average for each compartment.

#### Test Period for EP2i, T2i:

EP2i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2i to be at least 24 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following regular freezer compressor cycles, ending at the end of a regular freezer compressor oncycle before the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24 hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

#### Test Measurement Frequency

Measurements shall be taken at regular interval not exceeding 1 minute.

For the reasons that DOE described in its granting of waiver and interim waiver for Sub-Zero and LG for refrigerator-freezers with shared dual compressors, Samsung believes that the expeditious granting of Waiver and Interim Waiver for the model listed below is warranted:

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Please feel free to contact me if you have any questions regarding this Application for Petition for Waiver and Application for Interim Waiver. I will be happy to discuss should any questions arise.

Sincerely,  
Michael Moss  
Director of Corporate Environmental Affairs

[FR Doc. 2013-05767 Filed 03/12/2013 at 8:45 am; Publication Date: 03/13/2013]